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CLAIMS AMENDMENTS

Please amend claims 1 and 23 as shown below. All other claims remain unchanged.

- 1 1. (Currently Amended) An optical pickup apparatus comprising:  
2 an electronically reconfigurable diffraction grating  
3 modulating relative light intensities of at least two different  
4 diffraction orders of light diffracted by said electronically  
5 reconfigurable diffraction grating;  
6 delivery and focusing optics for focusing said light  
7 diffracted by said electronically reconfigurable diffraction  
8 grating into diffractive spots corresponding with each of said  
9 diffraction orders and delivering said diffracted ~~directed~~ light  
10 onto an optical storage medium, which light is then reflected by  
11 said optical storage medium; and  
12 a detector for detecting said light reflected by said  
13 optical storage medium and striking said detector.
- 1 2. (Original) The apparatus of claim 1, wherein:  
2 said diffraction orders comprise two diffraction orders  
3 comprising zeroth and first diffraction orders;  
4 said delivery and focusing optics causes said diffractive  
5 spots corresponding with said zeroth order to partially overlap  
6 with said diffractive spots corresponding with said first order;  
7 and  
8 overlapping light from said zeroth and first diffractive  
9 orders striking said detector is resolved into its proper orders  
10 by examining the modulation of the intensities of said  
11 overlapping light in relation to known modulation frequencies of

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12 said zeroth and first diffraction orders by said electronically  
13 reconfigurable diffraction grating.

1 3. (Original) The apparatus of claim 1, wherein:

2 said diffraction orders comprise more than two diffraction  
3 orders, comprising zeroth and first diffraction orders, and at  
4 least one additional diffraction order higher than said zeroth  
5 and first diffraction orders.

1 4. (Original) The apparatus of claim 1, wherein:

2 said diffraction orders comprise more than two diffraction  
3 orders, comprising zeroth and first diffraction orders, and at  
4 least one additional diffraction order higher than said zeroth  
5 and first diffraction orders;

6 said delivery and focusing optics causes said diffractive  
7 spots corresponding with each said diffraction order to partially  
8 overlap with said diffractive spots corresponding with at least a  
9 diffraction order adjacent thereto; and

10 overlapping light from said more than two diffractive orders  
11 striking said detector is resolved into its proper orders by  
12 examining the modulation of intensities of said overlapping light  
13 in relation to known modulation frequencies of said more than two  
14 diffractive orders by said electronically reconfigurable  
15 diffraction grating.

1 5. (Original) The apparatus of claim 1, wherein:

2 said diffraction orders comprise more than two diffraction  
3 orders, comprising zeroth and first diffraction orders, and at  
4 least one additional diffraction order higher than said zeroth  
5 and first diffraction orders;

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6        said delivery and focusing optics causes said diffractive  
7        spots corresponding with each said diffraction order to partially  
8        overlap with said diffractive spots corresponding with at least a  
9        diffraction order adjacent thereto; and  
10       overlapping light from said more than two diffractive orders  
11       striking said detector is resolved into its proper orders by  
12       examining the modulation of intensities and the phase shift of  
13       said overlapping light in relation to known modulation  
14       frequencies of said more than two diffractive orders by said  
15       electronically reconfigurable diffraction grating.

1       6. (Original) The apparatus of claim 2, wherein:

2       light from said zeroth order comprises content information  
3       from said optical storage medium;

4       light from said first order comprises tracking information  
5       from said optical storage medium.

1       7. (Original) The apparatus of claim 2, wherein:

2       light from said zeroth order comprises content information  
3       from said optical storage medium;

4       light from said first order comprises content information  
5       from said optical storage medium;

6       light from said second order comprises tracking information  
7       from said optical storage medium.

1       8. (Original) The apparatus of claim 2, wherein:

2       light from said zeroth order comprises content information  
3       from said optical storage medium;

4       light from said first order comprises tracking information  
5       from said optical storage medium;

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6 light from said second order comprises tracking information  
7 from said optical storage medium.

1 9. (Original) The apparatus of claim 3, wherein:

2 light from said zeroth order comprises content information  
3 from said optical storage medium;

4 light from said first order comprises content information  
5 from said optical storage medium;

6 light from said second order comprises tracking information  
7 from said optical storage medium.

1 10. (Original) The apparatus of claim 3, wherein:

2 light from said zeroth order comprises content information  
3 from said optical storage medium;

4 light from said first order comprises tracking information  
5 from said optical storage medium;

6 light from said second order comprises tracking information  
7 from said optical storage medium.

1 11. (Original) The apparatus of claim 4, wherein:

2 light from said zeroth order comprises information content  
3 from said optical storage medium;

4 light from said first order comprises content information  
5 from said optical storage medium;

6 light from said second order comprises tracking information  
7 from said optical storage medium.

1 12. (Original) The apparatus of claim 4, wherein:

2 light from said zeroth order comprises content information  
3 from said optical storage medium;

4 light from said first order comprises tracking information

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5 from said optical storage medium;

6 light from said second order comprises tracking information  
7 from said optical storage medium.

1 13. (Original) The apparatus of claim 1, wherein:

2 said electronically reconfigurable diffraction grating  
3 comprises a reflection grating.

1 14. (Previously Withdrawn) The apparatus of claim 1, wherein:

2 said electronically reconfigurable diffraction grating  
3 comprises a transmission grating.

1 15. (Original) The apparatus of claim 1, wherein:

2 said apparatus reads content and tracking information  
3 prerecorded on said optical storage medium.

1 16. (Original) The apparatus of claim 1, wherein:

2 said light striking said photodetector is comprised of at least  
3 two individual said diffractive orders;

4 whereby each individual said diffractive order has measuring  
5 properties that comprise said intensity, said frequency of  
6 intensity modulation, and said phase;

7 and whereby said photodetector measures said individual  
8 diffractive orders by at least one of said measuring property.

1 17. (Original) The apparatus of claim 2, wherein:

2 said light striking said photodetector is comprised of; said  
3 zero diffractive order with a first set of said measuring  
4 properties which comprises a first intensity, a first frequency  
5 of intensity modulation, and a first phase; and said first  
6 diffractive orders with a second set of said measuring properties  
7 which comprises a second intensity, a second frequency of

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8 intensity modulation, a second phase;

9 whereby said first orders may overlap with said zero order  
10 on said detector;

11 and whereby said zero and first orders may be read  
12 simultaneously by said detector and differentiated by said  
13 detector by any of their individual said measuring properties.

1 18. (Original) The apparatus of claim 2, wherein:

2 said light striking said photodetector is comprised of; said  
3 zero diffractive order with a first set of said measuring  
4 properties which comprises a first intensity, a first frequency  
5 of intensity modulation, and a first phase; said first  
6 diffractive orders with a second set of said measuring properties  
7 which comprises a second intensity, a second frequency of  
8 intensity modulation, a second phase; and said second diffractive  
9 orders with a third set of said measuring properties which  
10 comprises a third intensity, a third frequency of modulation and  
11 a third phase;

12 whereby said first orders may overlap with said zero order  
13 on said detector, and said second orders may overlap with said  
14 first orders on said detector;

15 and whereby said zero, first and second orders may be read  
16 simultaneously by said detector and differentiated by said  
17 detector by any of their individual said measuring properties.

1 19. (Original) The apparatus of claim 3, wherein:

2 said light striking said photodetector is comprised of; said  
3 zero diffractive order with a first set of said measuring  
4 properties which comprises a first intensity, a first frequency

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5 of intensity modulation, and a first phase; and said first  
6 diffractive orders with a second set of said measuring properties  
7 which comprises a second intensity, a second frequency of  
8 intensity modulation, a second phase;

9 whereby said first orders may overlap with said zero order  
10 on said detector;

11 and whereby said zero and first orders may be read  
12 simultaneously by said detector and differentiated by said  
13 detector by any of their individual said measuring properties.

1 20. (Original) The apparatus of claim 3, wherein:

2 said light striking said photodetector is comprised of; said  
3 zero diffractive order with a first set of said measuring  
4 properties which comprises a first intensity, a first frequency  
5 of intensity modulation, and a first phase; said first  
6 diffractive orders with a second set of said measuring properties  
7 which comprises a second intensity, a second frequency of  
8 intensity modulation, a second phase; and said second diffractive  
9 orders with a third set of said measuring properties which  
10 comprises a third intensity, a third frequency of modulation and  
11 a third phase;

12 whereby said first orders may overlap with said zero order  
13 on said detector, and said second orders may overlap with said  
14 first orders on said detector;

15 and whereby said zero, first and second orders may be read  
16 simultaneously by said detector and differentiated by said  
17 detector by any of their individual said measuring properties.

1 21. (Original) The apparatus of claim 4, wherein:

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2        said light striking said photodetector is comprised of; said  
3        zero diffractive order with a first set of said measuring  
4        properties which comprises a first intensity, a first frequency  
5        of intensity modulation, and a first phase; and said first  
6        diffractive orders with a second set of said measuring properties  
7        which comprises a second intensity, a second frequency of  
8        intensity modulation, a second phase;

9        whereby said first orders may overlap with said zero order  
10       on said detector;

11       and whereby said zero and first orders may be read  
12       simultaneously by said detector and differentiated by said  
13       detector by any of their individual said measuring properties.

1       22. (Original) The apparatus of claim 4, wherein:

2        said light striking said photodetector is comprised of; said  
3        zero diffractive order with a first set of said measuring  
4        properties which comprises a first intensity, a first frequency  
5        of intensity modulation, and a first phase; said first  
6        diffractive orders with a second set of said measuring properties  
7        which comprises a second intensity, a second frequency of  
8        intensity modulation, a second phase; and said second diffractive  
9        orders with a third set of said measuring properties which  
10       comprises a third intensity, a third frequency of modulation and  
11       a third phase;

12       whereby said first orders may overlap with said zero order  
13       on said detector, and said second orders may overlap with said  
14       first orders on said detector;

15       and whereby said zero, first and second orders may be read



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16 simultaneously by said detector and differentiated by said  
17 detector by any of their individual said measuring properties.

1 23. (Currently Amended) A method for reading an optical storage  
2 device comprising the steps of:

3 modulating relative light intensities of at least two  
4 different diffraction orders of light diffracted by an  
5 electronically reconfigurable diffraction grating;  
6 focusing said light diffracted by said electronically  
7 reconfigurable diffraction grating into diffractive spots  
8 corresponding with each of said diffraction orders and delivering  
9 | said diffracted ~~directed~~ light onto an optical storage medium,  
10 which light is then reflected by said optical storage medium; and  
11 detecting said light reflected by said optical storage  
12 medium by a detector.

1 24. (Original) The method of claim 23, wherein:  
2 said diffraction orders comprise two diffraction orders  
3 comprising zeroth and first diffraction orders;  
4 said diffractive spots corresponding with said zeroth order  
5 partially overlaps with said diffractive spots corresponding with  
6 said first order; and further comprising,  
7 resolving overlapping light from said zeroth and first  
8 diffractive orders by said detector into its proper orders by  
9 examining the modulation of the intensities of said overlapping  
10 light in relation to known modulation frequencies of said zeroth  
11 and first diffraction orders by said electronically  
12 reconfigurable diffraction grating.

1 25. (Original) The method of claim 23, wherein:

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2        said diffraction orders comprise more than two diffraction  
3 orders, comprising zeroth and first diffraction orders, and at  
4 least one additional diffraction order higher than said zeroth  
5 and first diffraction orders.

1    26. (Original) The method of claim 23, wherein:

2        said diffraction orders comprise more than two diffraction  
3 orders, comprising zeroth and first diffraction orders, and at  
4 least one additional diffraction order higher than said zeroth  
5 and first diffraction orders;

6        said diffractive spots corresponding with each said  
7 diffraction order partially overlap with said diffractive spots  
8 corresponding with at least a diffraction order adjacent thereto;  
9 and further comprising

10       resolving overlapping light from said more than two  
11 diffractive orders by said detector into its proper orders by  
12 examining the modulation of intensities of said overlapping light  
13 in relation to known modulation frequencies of said more than two  
14 diffractive orders by said electronically reconfigurable  
15 diffraction grating.

1    27. (Original) The method of claim 23, wherein:

2        said diffraction orders comprise more than two diffraction  
3 orders, comprising zeroth and first diffraction orders, and at  
4 least one additional diffraction order higher than said zeroth  
5 and first diffraction orders;

6        said delivery and focusing optics causes said diffractive  
7 spots corresponding with each said diffraction order to partially  
8 overlap with said diffractive spots corresponding with at least a

10 resolving overlapping light from said more than two  
11 diffractive orders by said detector into its proper orders by  
12 examining the modulation of intensities and the phase shift of  
13 said overlapping light in relation to known modulation  
14 frequencies of said more than two diffractive orders by said  
15 electronically reconfigurable diffraction grating.

1 28. (Original) The method of claim 24,  
2 said light from said zeroth order comprising content  
3 information from said optical storage medium;  
4 said light from said first order comprising tracking  
5 information from said optical storage medium.

1 29. (Original) The method of claim 24,  
2 said light from said zeroth order comprising content  
3 information from said optical storage medium;  
4 said light from said first order comprising content  
5 information from said optical storage medium  
6 said light from said second order comprising tracking  
7 information from said optical storage medium.

1 30. (Original) The method of claim 24,  
2 said light from said zeroth order comprising content  
3 information from said optical storage medium;  
4 said light from said first order comprising tracking  
5 information from said optical storage medium.  
6 said light from said second order comprising tracking  
7 information from said optical storage medium.

1 31. (Original) The method of claim 25,

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2        said light from said zeroth order comprising content  
3 information from said optical storage medium;

4        said light from said first order comprising content  
5 information from said optical storage medium

6        said light from said second order comprising tracking  
7 information from said optical storage medium.

1 32. (Original) The method of claim 25,

2        said light from said zeroth order comprising content  
3 information from said optical storage medium;

4        said light from said first order comprising tracking  
5 information from said optical storage medium;

6        said light from said second order comprising tracking  
7 information from said optical storage medium.

1 33. (Original) The method of claim 26,

2        said light from said zeroth order comprising information  
3 content from said optical storage medium;

4        said light from said first order comprising content  
5 information from said optical storage medium;

6        said light from said second order comprising tracking  
7 information from said optical storage medium.

1 34. (Original) The method of claim 26,

2        said light from said zeroth order comprising content  
3 information from said optical storage medium;

4        said light from said first order comprising tracking  
5 information from said optical storage medium;

6        said light from said second order comprising tracking  
7 information from said optical storage medium.

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- 1 35. (Original) The method of claim 23,  
2 said electronically reconfigurable diffraction grating  
3 comprising a reflection grating.
- 1 36. (Previously Withdrawn) The method of claim 23,  
2 said electronically reconfigurable diffraction grating  
3 comprising a transmission grating.
- 1 37. (Original) The method of claim 23,  
2 said apparatus reads content and tracking information  
3 prerecorded on said optical storage medium.
- 1 38. (Original) The method of claim 23,  
2 striking said photodetector with said light further  
3 comprising at least two individual said diffractive orders;  
4 whereby each individual said diffractive order has measuring  
5 properties comprising said intensity, said frequency of intensity  
6 modulation, and said phase; and  
7 measuring by said photodetector of said individual  
8 diffractive orders by utilizing at least one of said measuring  
9 property.
- 1 39. (Original) The method of claim 24,  
2 striking said photodetector with said light further  
3 comprising;  
4 said zero diffractive order with a first set of said  
5 measuring properties comprising a first intensity, a first  
6 frequency of intensity modulation, and a first phase; and  
7 said first diffractive orders with a second set of said  
8 measuring properties comprising a second intensity, a second  
9 frequency of intensity modulation, a second phase;

10 overlapping of said first orders with said zero order on  
11 said detector;  
12 reading simultaneously by said detector said zero and said  
13 first diffractive orders and differentiating by said detector  
14 utilizing any of their individual said measuring properties.

1 40. (Original) The method of claim 24,  
2 striking said photodetector with said light further  
3 comprising;

4 said zero diffractive order with a first set of said  
5 measuring properties comprising a first intensity, a first  
6 frequency of intensity modulation, and a first phase; and  
7 said first diffractive orders with a second set of said  
8 measuring properties comprising a second intensity, a second  
9 frequency of intensity modulation, a second phase; and  
10 said second diffractive orders with a third set of said  
11 measuring properties comprising a third intensity, a third  
12 frequency of modulation and a third phase;

13 overlapping of said first orders with said zero order on  
14 said detector, and overlapping of said second orders on said  
15 detector;

16 reading simultaneously by said detector said zero  
17 diffractive order, said first diffractive orders and said second  
18 diffractive orders, differentiating by said detector utilizing  
19 any of their individual said measuring properties.

1 41. (Original) The method of claim 25,  
2 striking said photodetector with said light further  
3 comprising;

4        said zero diffractive order with a first set of said  
5        measuring properties comprising a first intensity, a first  
6        frequency of intensity modulation, and a first phase; and  
7        said first diffractive orders with a second set of said  
8        measuring properties comprising a second intensity, a second  
9        frequency of intensity modulation, a second phase;  
10       overlapping of said first orders with said zero order on  
11       said detector;  
12       reading simultaneously by said detector said zero and said  
13       first diffractive orders and differentiating by said detector  
14       utilizing any of their individual said measuring properties.

1       42. (Original) The method of claim 25,  
2       striking said photodetector with said light further  
3       comprising;  
4       said zero diffractive order with a first set of said  
5       measuring properties comprising a first intensity, a first  
6       frequency of intensity modulation, and a first phase; and  
7       said first diffractive orders with a second set of said  
8       measuring properties comprising a second intensity, a second  
9       frequency of intensity modulation, a second phase; and  
10       said second diffractive orders with a third set of said  
11       measuring properties comprising a third intensity, a third  
12       frequency of modulation and a third phase;  
13       overlapping of said first orders with said zero order on  
14       said detector, and overlapping of said second orders on said  
15       detector;  
16       reading simultaneously by said detector said zero

17 diffractive order, said first diffractive orders and said second  
18 diffractive orders, differentiating by said detector utilizing  
19 any of their individual said measuring properties.

1 43. (Original) The method of claim 26,  
2 striking said photodetector with said light further  
3 comprising;  
4 said zero diffractive order with a first set of said  
5 measuring properties comprising a first intensity, a first  
6 frequency of intensity modulation, and a first phase; and  
7 said first diffractive orders with a second set of said  
8 measuring properties comprising a second intensity, a second  
9 frequency of intensity modulation, a second phase;  
10 overlapping of said first orders with said zero order on  
11 said detector;  
12 reading simultaneously by said detector said zero and said  
13 first diffractive orders and differentiating by said detector  
14 utilizing any of their individual said measuring properties.

1 44. (Original) The method of claim 26,  
2 striking said photodetector with said light further  
3 comprising;  
4 said zero diffractive order with a first set of said  
5 measuring properties comprising a first intensity, a first  
6 frequency of intensity modulation, and a first phase; and  
7 said first diffractive orders with a second set of said  
8 measuring properties comprising a second intensity, a second  
9 frequency of intensity modulation, a second phase; and  
10 said second diffractive orders with a third set of said



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11 measuring properties comprising a third intensity, a third  
12 frequency of modulation and a third phase;  
13 overlapping of said first orders with said zero order on  
14 said detector, and overlapping of said second orders on said  
15 detector;  
16 reading simultaneously by said detector said zero  
17 diffractive order, said first diffractive orders and said second  
18 diffractive orders, differentiating by said detector utilizing  
19 any of their individual said measuring properties.

1 45. (Previously Presented) A method for detecting and  
2 interpreting light signals striking a detector of an optical  
3 pickup apparatus, comprising the steps of:  
4 causing said light signal to strike said detector in a  
5 manner that comprises at least two individual diffractive orders  
6 diffracted by an electronically reconfigurable diffraction  
7 grating, whereby each said individual diffractive order is  
8 possessing individual measuring properties comprising an  
9 intensity, an intensity modulation and a phase;  
10 interpreting said light signal striking said detector by  
11 reading said individual measuring properties of each said  
12 individual diffractive order and extracting content or tracking  
13 information.